WHAT IS CLAIMED IS:

1. An information filtering apparatus, comprising:

information indicating means for indicating pieces of learning information;

learning information control means for receiving a plurality of teaching signals respectively indicating whether one piece of learning information indicated by the information indicating means is necessary or unnecessary and generating pieces of teaching data respectively composed of one piece of learning information and one teaching signal corresponding to the piece of learning information;

learning means for performing a learning operation for each of the pieces of teaching data generated by the learning information control means to produce records indicating whether each piece of learning information indicated by the information indicating means is judged to be necessary or unnecessary; and

information filtering means for filtering pieces of information data according to the records produced by the learning means to arrange the pieces of information data in order of necessity.

2. An information filtering apparatus according to claim 1 in which

the learning means comprises metric signal calculating means

for calculating a metric signal, indicating the records about the learning information judged to be necessary or unnecessary, from the pieces of teaching data, and

the information filtering means comprises

vector generating means for generating a vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of information data, for each of the pieces of information data;

score calculating means for calculating a score signal from the vector signal generated by the vector generating means and the metric signal calculated by the metric signal calculating means for each of the pieces of information data on condition that a value of each score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be necessary or unnecessary is increased; and

information data writing control means for arranging the pieces of information data in order of necessity according to the score signals calculated by the score calculating means.

3. An information filtering apparatus according to claim 1 in which the learning means comprises

affirmative metric signal calculating means for calculating an affirmative metric signal indicating the records about the

pieces of learning information judged to be necessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is necessary; and

negative metric signal calculating means for calculating a negative metric signal indicating the records about the pieces of learning information judged to be unnecessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is unnecessary, and

the information filtering means comprises

vector generating means for generating a vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of information data, for each of the pieces of information data;

affirmative score signal calculating means for calculating an affirmative score signal from the vector signal generated by the vector generating means and the affirmative metric signal calculated by the affirmative metric signal calculating means for each of the pieces of information data on condition that a value of each affirmative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be necessary is increased;

negative score signal calculating means for calculating a

negative score signal from the vector signal generated by the vector generating means and the negative metric signal calculated by the negative metric signal calculating means for each of the pieces of information data on condition that a value of each negative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be unnecessary is increased; and

information data writing control means for arranging the pieces of information data in order of necessity according to the affirmative score signals calculated by the affirmative score signal calculating means and the negative score signals calculated by the negative score signal calculating means.

4. An information filtering apparatus according to claim 3 in which the learning means further comprises learning vector generating means for generating a learning vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of learning information, for each of the pieces of learning information,

the affirmative metric signal calculated by the affirmative metric signal calculating means is an auto-correlation matrix of the learning vector signal generated by the learning vector generating means in cases where one piece of learning information corresponding to the learning vector signal is

judged to be necessary, and

the negative metric signal calculated by the negative metric signal calculating means is an auto-correlation matrix of the learning vector signal generated by the learning vector generating means in cases where one piece of learning information corresponding to the learning vector signal is judged to be unnecessary.

5. An information filtering apparatus according to claim 3 in which the affirmative metric signal calculated by the affirmative metric signal calculating means is a matrix composed of a plurality of (i,j) elements and each (i,j) element of the affirmative metric signal is calculated from a frequency of the pieces of learning information judged to be necessary and another frequency of the pieces of learning information, judged to be necessary, to which an i-th keyword and a j-th keyword stored in a dictionary storing unit are attached together, and the negative metric signal calculated by the negative metric signal calculating means is a matrix composed of (i,j) elements and each (i,j) element of the affirmative metric signal is calculated from a frequency of the pieces of learning information judged to be unnecessary and another frequency of the pieces of learning information, judged to be unnecessary, to which an i-th keyword and a j-th keyword stored in the dictionary storing unit are attached

together.

6. An information filtering apparatus according to claim 5 in which each (i,j) element of the affirmative metric signal is determined by quantitatively estimating a difference between a probability that one piece of learning information is judged to be necessary and a probability that one piece of learning information to which an i-th keyword and a j-th keyword stored in a dictionary storing unit are attached together is judged to be necessary, and each (i,j) element of the negative metric signal is determined by quantitatively estimating a difference between a probability that one piece of learning information is judged to be unnecessary and a probability that one piece of learning information to which an i-th keyword and a j-th keyword stored in the dictionary storing unit are attached together is judged to be unnecessary.

7. An information filtering apparatus according to claim 1 in which the learning means comprises

learning vector generating means for generating a learning vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of learning information, for each of the pieces of learning information;

affirmative metric signal calculating means for calculating an affirmative metric signal indicating the records about the pieces of learning information judged to be necessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is necessary;

negative metric signal calculating means for calculating a negative metric signal indicating the records about the pieces of learning information judged to be unnecessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is unnecessary;

learning affirmative score signal calculating means for calculating a learning affirmative score signal from the learning vector signal generated by the learning vector generating means and the affirmative metric signal calculated by the affirmative metric signal calculating means for each of the pieces of learning information on condition that a value of each learning affirmative score signal becomes high as the number of keywords which are attached to one piece of learning information and agree with those attached to the pieces of learning information judged to be necessary is increased;

learning negative score signal calculating means for calculating a learning negative score signal from the learning vector signal generated by the learning vector generating

means and the negative metric signal calculated by the negative metric signal calculating means for each of the pieces of learning information on condition that a value of each learning negative score signal becomes high as the number of keywords which are attached to one piece of learning information and agree with those attached to the pieces of learning information judged to be unnecessary is increased; and

judging parameter learning means for arranging a set of a value LSY of the learning affirmative score signal calculated by the learning affirmative score signal calculating means and a value LSN of the learning negative score signal calculated by the learning negative score signal calculating means at coordinates (LSN, LSY) of a two-dimensional co-ordinate system for each of the pieces of learning information and calculating a judging parameter indicating an inclination of a boundary line which separates one or more sets corresponding to one or more pieces of learning information judged to be necessary from one or more sets corresponding to one or more pieces of learning information judged to be unnecessary, and

the information filtering means comprises

vector generating means for generating a vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of information data, for each of the pieces of information data;

affirmative score signal calculating means for calculating an affirmative score signal from the vector signal generated by the vector generating means and the affirmative metric signal calculated by the affirmative metric signal calculating means for each of the pieces of information data on condition that a value of each affirmative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be necessary is increased;

negative score signal calculating means for calculating a negative score signal from the vector signal generated by the vector generating means and the negative metric signal calculated by the negative metric signal calculating means for each of the pieces of information data on condition that a value of each negative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be unnecessary is increased;

necessity calculating means for calculating a necessity degree of one piece of information data from the affirmative score signal calculated by the affirmative score signal calculating means, the negative score signal calculated by the negative score signal calculating means and the judging parameter calculated by the judging parameter learning means; and

information data writing control means for arranging the pieces of information data in order of necessity according to the necessity degrees of the pieces of information data calculated by the necessity calculating means.

8. An information filtering apparatus according to claim 7, further comprising unread data storing means for storing the pieces of information data arranged in order of necessity by the information data writing control means, and

the learning information control means comprises unread data output controlling means for controlling the output of the pieces of information data stored in the unread data storing means for the information indicating means to preferentially indicate one or more pieces of information data having a high necessary degree.

9. An information filtering apparatus according to claim 1, further comprising:

dictionary storing means for storing a plurality of code dictionary signals respectively composed of a character stream and a numeral;

adaptive dictionary storing means for storing a plurality of adaptive code dictionary signals respectively composed of a character stream, a numeral, an affirmative number indicating the number of affirmative judgements which each are performed

when a piece of learning information used for the learning operation in the learning means is necessary on condition that the character stream is attached to the piece of information data as a keyword and a negative number indicating the number of negative judgements which each are performed when a piece of learning information used for the learning operation in the learning means is unnecessary on condition that the character stream is attached to the piece of information data as a keyword;

response number storing means for counting and storing an affirmative response number indicating the number of affirmative responses which each are performed when a piece of learning information used for the learning operation in the learning means is necessary and a negative response number indicating the number of negative responses which each are performed when a piece of learning information used for the learning operation in the learning means is unnecessary; and

dictionary learning means for generating a keyword cost signal from the affirmative number and the negative number stored in the adaptive dictionary storing means and the affirmative response number and the negative response number stored in the response number storing means for each of character streams, arranging the adaptive code dictionary signals stored in the adaptive dictionary storing means in order of magnitude of the keyword cost signals and replacing

the code dictionary signals stored in the dictionary storing means with a plurality of sets of character streams and numerals included in the adaptive code dictionary signals in that order.

10. An information filtering apparatus according to claim 9 in which the keyword cost signal generated by the dictionary learning means for a character stream is determined by quantitatively estimating a difference between a probability that a piece of learning information is necessary and a probability that a piece of learning information to which the character stream is attached as a keyword is necessary and another difference between a probability that a piece of learning information is unnecessary and a probability that a piece of learning information to which the character stream is attached as a keyword is unnecessary.

11. An information filtering apparatus according to claim 9 in which the keyword cost signal generated by the dictionary learning means for a character stream is determined on condition that a value of the keyword cost signal is increased as a difference between a probability that a piece of learning information is necessary and a probability that a piece of learning information to which the character stream is attached as a keyword is necessary is enlarged and another difference

between a probability that a piece of learning information is unnecessary and a probability that a piece of learning information to which the character stream is attached as a keyword is unnecessary is enlarged.

12. An information filtering apparatus according to claim 1 in which one keyword which is attached to one piece of learning information indicated by the information indicating means or is attached to one piece of information data filtered by the information filtering means is a classification code.

13. An information filtering apparatus according to claim 1, further comprising:

an original data base for storing pieces of data;

original data base reading-out means for reading out the pieces of data from the original data base to reconstruct the pieces of data in order of necessity in the information filtering means;

adaptive data base writing unit for temporarily holding the pieces of data reconstructed in the information filtering means as pieces of adaptive data; and

an adaptive data base for storing the pieces of adaptive data held in the adaptive data base writing unit.

14. An information filtering apparatus according to claim 9,

further comprising:

one-order metric signal storing means for storing a one-order metric signal calculated from each of the adaptive code dictionary signals in the dictionary learning means;

keyword estimating means for calculating a necessary information occurrence ratio denoting a ratio of the number of pieces of learning information judged to be necessary to the number of all pieces of learning information and an unnecessary information occurrence ratio denoting a ratio of the number of pieces of learning information judged to be unnecessary to the number of all pieces of learning information from the affirmative response number and the negative response number stored in the response number storing means for each of character streams, calculating an affirmative keyword occurrence probability denoting a probability that a character stream is attached to a piece of learning information judged to be necessary as a keyword and a negative keyword occurrence probability denoting a probability that a character stream is attached to a piece of learning information judged to be unnecessary as a keyword for each of character streams from the one-order metric signal stored in the one-order metric signal storing means, calculating an affirmative deviation signal denoting a difference between the necessary information occurrence ratio and the affirmative keyword occurrence probability for each of character streams

and a negative deviation signal denoting a difference between the unnecessary information occurrence ratio and the negative keyword occurrence probability for each of character streams, and calculating a keyword estimating signal from the affirmative deviation signal and the negative deviation signal for each of character streams;

keyword estimating signal sorting means for sorting the keyword estimating signals calculated by the keyword estimating means to produce a plurality of sorted keyword estimating signals; and

keyword retrieval equation generating means for determining a character stream corresponding to each of the sorted keyword estimating signals as a keyword defined in a term of a keyword retrieval equation and outputting the keyword retrieval equation composed of a plurality of keywords.

15. An information filtering apparatus according to claim 14 in which

the one-order metric signal storing means comprises

one-order affirmative metric signal storing means for storing a one-order affirmative metric signal calculated from one affirmative number or numeral of each of the adaptive code dictionary signals; and

one-order negative metric signal storing means for storing a one-order negative metric signal calculated from one

negative number or numeral of each of the adaptive code dictionary signals, the affirmative keyword occurrence probability and the negative keyword occurrence probability being respectively calculated from the one-order affirmative metric signal and the one-order negative metric signal in the keyword estimating means.

16. An information filtering apparatus according to claim 14 in which the affirmative deviation signal calculated by the keyword estimating means for a character stream becomes a negative low value as the character stream is one-sidedly attached to learning information judged to be necessary, and the negative deviation signal calculated by the keyword estimating means for a character stream becomes a negative low value as the character stream is one-sidedly attached to learning information judged to be unnecessary.

17. An information filtering method, comprising the steps of:

indicating pieces of learning information on an indicating unit;

receiving a plurality of teaching signals respectively indicating whether one piece of learning information indicated on the indicating unit is necessary or unnecessary;

generating pieces of teaching data respectively composed of

one piece of learning information and one teaching signal corresponding to the piece of learning information;

performing a learning operation for each of the pieces of teaching data to produce records indicating whether each piece of learning information indicated by the information indicating means is judged to be necessary or unnecessary; and

filtering pieces of information data according to the records to arrange the pieces of information data in order of necessity.

18. An information filtering method according to claim 17 in which the step of performing a learning operation comprises the step of:

calculating a metric signal, indicating the records about the learning information judged to be necessary or unnecessary, from the pieces of teaching data, and

the step of filtering pieces of information data comprises the steps of:

generating a vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of information data, for each of the pieces of information data;

calculating a score signal from the vector signal and the metric signal for each of the pieces of information data on condition that a value of each score signal becomes high as

the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be necessary or unnecessary is increased; and

arranging the pieces of information data in order of necessity according to the score signals.

19. An information filtering method according to claim 17 in which the step of performing a learning operation comprises the steps of:

calculating an affirmative metric signal indicating the records about the pieces of learning information judged to be necessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is necessary; and

calculating a negative metric signal indicating the records about the pieces of learning information judged to be unnecessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is unnecessary, and

the step of filtering pieces of information data comprises the steps of:

generating a vector signal, which is composed of one or

more codes corresponding to one or more keywords attached to one piece of information data, for each of the pieces of information data;

calculating an affirmative score signal from the vector signal and the affirmative metric signal for each of the pieces of information data on condition that a value of each affirmative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be necessary is increased;

calculating a negative score signal from the vector signal and the negative metric signal for each of the pieces of information data on condition that a value of each negative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be unnecessary is increased; and

arranging the pieces of information data in order of necessity according to the affirmative score signals and the negative score signals.

20. An information filtering method according to claim 19 in which the step of performing a learning operation further comprises the steps of:

generating a learning vector signal, which is composed of

one or more codes corresponding to one or more keywords attached to one piece of learning information, for each of the pieces of learning information,

setting an auto-correlation matrix of the learning vector signal as the affirmative metric signal in cases where one piece of learning information corresponding to the learning vector signal is judged to be necessary, and

setting an auto-correlation matrix of the learning vector signal as the negative metric signal in cases where one piece of learning information corresponding to the learning vector is judged to be unnecessary.

21. An information filtering method according to claim 19 in which the step of calculating an affirmative metric signal comprises the steps of:

forming the affirmative metric signal as a matrix composed of a plurality of (i,j) elements; and

calculating each (i,j) element of the affirmative metric signal from a frequency of the pieces of learning information judged to be necessary and another frequency of the pieces of learning information, judged to be necessary, to which an i-th keyword and a j-th keyword stored in a dictionary storing unit are attached together, and

the step of calculating a negative metric signal comprises the steps of:

forming calculating a negative metric signal as a matrix composed of a plurality of (i,j) elements; and

calculating each (i,j) element of the affirmative metric signal from a frequency of the pieces of learning information judged to be unnecessary and another frequency of the pieces of learning information, judged to be unnecessary, to which an i-th keyword and a j-th keyword stored in the dictionary storing unit are attached together.

22. An information filtering method according to claim 21 in which the step of calculating each (i,j) element of the affirmative metric signal includes

determining each (i,j) element of the affirmative metric signal by quantitatively estimating a difference between a probability that one piece of learning information is judged to be necessary and a probability that one piece of learning information to which an i-th keyword and a j-th keyword stored in a dictionary storing unit are attached together is judged to be necessary, and

the step of calculating each (i,j) element of the negative metric signal includes

determining each (i,j) element of the negative metric signal by quantitatively estimating a difference between a probability that one piece of learning information is judged to be unnecessary and a probability that one piece of learning

information to which an i-th keyword and a j-th keyword stored in the dictionary storing unit are attached together is judged to be unnecessary.

23. An information filtering method according to claim 17 in which the step of performing a learning operation comprises the steps of:

generating a learning vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of learning information, for each of the pieces of learning information;

calculating an affirmative metric signal indicating the records about the pieces of learning information judged to be necessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is necessary;

calculating a negative metric signal indicating the records about the pieces of learning information judged to be unnecessary from the pieces of teaching data respectively composed of one piece of learning information and one teaching signal indicating that the piece of learning information is unnecessary;

calculating a learning affirmative score signal from the learning vector signal and the affirmative metric signal for

each of the pieces of learning information on condition that a value of each learning affirmative score signal becomes high as the number of keywords which are attached to one piece of learning information and agree with those attached to the pieces of learning information judged to be necessary is increased;

calculating a learning negative score signal from the learning vector signal and the negative metric signal for each of the pieces of learning information on condition that a value of each learning negative score signal becomes high as the number of keywords which are attached to one piece of learning information and agree with those attached to the pieces of learning information judged to be unnecessary is increased;

arranging a set of a value LSY of the learning affirmative score signal and a value LSN of the learning negative score signal at coordinates (LSN, LSY) of a two-dimensional co-ordinate system for each of the pieces of learning information; and

calculating a judging parameter indicating an inclination of a boundary line which separates one or more sets corresponding to one or more pieces of learning information judged to be necessary from one or more sets corresponding to one or more pieces of learning information judged to be unnecessary, and

the step of filtering pieces of information data comprises the steps of:

generating a vector signal, which is composed of one or more codes corresponding to one or more keywords attached to one piece of information data, for each of the pieces of information data;

calculating an affirmative score signal from the vector signal and the affirmative metric signal for each of the pieces of information data on condition that a value of each affirmative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be necessary is increased;

calculating a negative score signal from the vector signal and the negative metric signal for each of the pieces of information data on condition that a value of each negative score signal becomes high as the number of keywords which are attached to one piece of information data and agree with those attached to the pieces of learning information judged to be unnecessary is increased;

calculating a necessity degree of one piece of information data from the affirmative score signal, the negative score signal and the judging parameter; and

arranging the pieces of information data in order of necessity according to the necessity degrees of the pieces of

information data.

24. An information filtering method according to claim 23, further comprising the step of:

controlling the output of the pieces of information data arranged in order of necessity to preferentially indicate one or more pieces of information data having a high necessary degree.

25. An information filtering method according to claim 17, further comprising the steps of:

preparing a plurality of code dictionary signals respectively composed of a character stream and a numeral;

preparing a plurality of adaptive code dictionary signals respectively composed of a character stream, a numeral, an affirmative number indicating the number of affirmative judgements which each are performed when a piece of learning information used for the learning operation in the learning means is necessary on condition that the character stream is attached to the piece of information data as a keyword and a negative number indicating the number of negative judgements which each are performed when a piece of learning information used for the learning operation in the learning means is unnecessary on condition that the character stream is attached to the piece of information data as a keyword;

counting an affirmative response number indicating the number of affirmative responses which each are performed when a piece of learning information used for the learning operation is necessary;

counting a negative response number indicating the number of negative responses which each are performed when a piece of learning information used for the learning operation is unnecessary; and

generating a keyword cost signal from the affirmative number, the negative number, the affirmative response number and the negative response number for each of character streams;

arranging the adaptive code dictionary signals in order of magnitude of the keyword cost signals; and

replacing the code dictionary signals with a plurality of sets of character streams and numerals included in the adaptive code dictionary signals in that order.

26. An information filtering method according to claim 25 in which the step of generating a keyword cost signal comprises the steps of:

determining the keyword cost signal for a character stream by quantitatively estimating a difference between a probability that a piece of learning information is necessary and a probability that a piece of learning information to

which the character stream is attached as a keyword is necessary and another difference between a probability that a piece of learning information is unnecessary and a probability that a piece of learning information to which the character stream is attached as a keyword is unnecessary.

27. An information filtering method according to claim 25 in which the step of generating a keyword cost signal comprises the steps of:

determining the keyword cost signal for a character stream on condition that a value of the keyword cost signal is increased as a difference between a probability that a piece of learning information is necessary and a probability that a piece of learning information to which the character stream is attached as a keyword is necessary is enlarged and another difference between a probability that a piece of learning information is unnecessary and a probability that a piece of learning information to which the character stream is attached as a keyword is unnecessary is enlarged.

28. An information filtering method according to claim 17 in which one keyword which is attached to one piece of learning information or one piece of information data is a classification code.

29. An information filtering method according to claim 17, further comprising the steps of:

preparing an original data base in which pieces of data are registered; and

reading out the pieces of data from the original data base, and

the step of filtering pieces of information data includes

reconstructing the pieces of data in order of necessity to form pieces of adaptive data; and

registering the pieces of adaptive data in an adaptive data base.

30. An information filtering apparatus according to claim 25, further comprising the steps of:

calculating a one-order metric signal from each of the adaptive code dictionary signals;

calculating a necessary information occurrence ratio denoting a ratio of the number of pieces of learning information judged to be necessary to the number of all pieces of learning information from the affirmative response number and the negative response number for each of character streams;

calculating an unnecessary information occurrence ratio denoting a ratio of the number of pieces of learning information judged to be unnecessary to the number of all

pieces of learning information from the affirmative response number and the negative response number for each of character streams;

calculating an affirmative keyword occurrence probability denoting a probability that a character stream is attached to a piece of learning information judged to be necessary as a keyword for each of character streams from the one-order metric signal;

calculating a negative keyword occurrence probability denoting a probability that a character stream is attached to a piece of learning information judged to be unnecessary as a keyword for each of character streams from the one-order metric signal;

calculating an affirmative deviation signal denoting a difference between the necessary information occurrence ratio and the affirmative keyword occurrence probability for each of character streams;

calculating a negative deviation signal denoting a difference between the unnecessary information occurrence ratio and the negative keyword occurrence probability for each of character streams;

calculating a keyword estimating signal from the affirmative deviation signal and the negative deviation signal for each of character streams;

sorting the keyword estimating signals to produce a

plurality of sorted keyword estimating signals;

determining a character stream corresponding to each of the sorted keyword estimating signals as a keyword defined in a term of a keyword retrieval equation; and

outputting the keyword retrieval equation composed of a plurality of keywords.

31. An information filtering method according to claim 30 in which the step of calculating a one-order metric signal comprising the steps of:

calculating a one-order affirmative metric signal from one affirmative number or numeral of each of the adaptive code dictionary signals; and

calculating a one-order negative metric signal from one negative number or numeral of each of the adaptive code dictionary signals, the affirmative keyword occurrence probability and the negative keyword occurrence probability being respectively calculated from the one-order affirmative metric signal and the one-order negative metric signal.

32. An information filtering method according to claim 30 in which the affirmative deviation signal for a character stream becomes a negative low value as the character stream is one-sidedly attached to pieces of learning information judged to be necessary, and the negative deviation signal for a

character stream becomes a negative low value as the character stream is one-sidedly attached to pieces of learning information judged to be unnecessary.

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